

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

- 1           1. (Currently amended) A router, comprising:  
2           a content addressable memory which stores Internet Protocol address  
3           prefixes in an order independent of lengths of the Internet Protocol address  
4           prefixes, wherein new entries are stored in the content addressable memory in  
5           random order; and  
6           an encoder coupled to the content addressable memory which stores a  
7           plurality of codes corresponding to the Internet Protocol address prefixes in the  
8           content addressable memory, and compares the codes corresponding to matching  
9           Internet Protocol address prefixes to find a longest matching Internet Protocol  
10          address prefix.
  
- 1           2. (Original) The router of claim 1, further comprising:  
2           a memory coupled to the encoder, the memory for storing a port number  
3           corresponding to each Internet Protocol address prefix in the content addressable  
4           memory and other information for routing an incoming Internet Protocol packet.
  
- 1           3. (Original) The router for claim 1, wherein the encoder includes circuitry  
2           for finding one of the plurality of codes.
  
- 1           4. (Original) The router for claim 1, wherein the encoder includes circuitry  
2           for deleting one of the plurality of codes.

1           5. (Original) The router of claim 1, wherein each of the plurality of codes  
2 indicates a number of relevant bits in the corresponding Internet Protocol address  
3 prefix.

1           6. (Original) The router of claim 5, wherein among the codes  
2 corresponding to matching Internet Protocol address prefixes, a code indicating a  
3 highest number of relevant bits indicates the longest matching Internet Protocol  
4 address prefix.

1           7. (Original) The router of claim 5, wherein the code indicates up to 32  
2 relevant bits in the corresponding Internet Protocol address prefix.

1           8. (Original) The router of claim 5, wherein the code indicates up to 128  
2 relevant bits in the corresponding Internet Protocol address prefix.

1           9. (Currently amended) A method for finding a longest matching prefix for  
2 an Internet Protocol address, comprising:  
3           storing Internet Protocol address prefixed in a content addressable memory  
4 in an order independent of lengths of the Internet Protocol address prefixes,  
5 wherein new entries are stored in the content addressable memory in random  
6 order; and  
7           comparing codes corresponding to matching Internet Protocol address  
8 prefixes in an encoder to find a longest matching Internet Protocol address prefix.

1           10. (Original) The method of claim 9, wherein the codes indicate numbers  
2 of relevant bits in the corresponding Internet Protocol address prefixes.

1           11. (Original) The method of claim 10, wherein among the codes  
2           corresponding to matching Internet Protocol addresses prefixes, the code  
3           indicating a highest number of relevant bits indicates the longest matching  
4           Internet Protocol address prefix.

1           12-25 (Canceled).

1           26. (Currently amended) A method of operating a router, comprising:  
2           receiving Internet Protocol address prefixes, wherein the Internet Protocol  
3           address prefixes are stored within a content addressable memory in random order;  
4           generating codes corresponding to a number of relevant bits in the Internet  
5           Protocol address prefix  
6           receiving a packet with a destination Internet Protocol address;  
7           comparing the destination Internet Protocol address to the Internet  
8           Protocol address prefixes to find the Internet Protocol address prefixes that match  
9           the destination Internet Protocol address:  
10          comparing the codes corresponding to the matching Internet Protocol  
11          address prefixes to find a longest matching Internet Protocol address prefix; and  
12          sending the packet to a port corresponding to the longest matching Internet  
13          Protocol address prefix.

1           27-30 (Canceled).